

PhD Position In Bosonic Quantum Error Correction With Superconducting Circuits

Ecole/Institution/Société:

University of Basel, Switzerland / Basel

Discipline:

Electrical Engineering, Electronics

Type d'emploi::

Full-time

Date de publication:

2021-10-16

Personne à contacter:

If you wish to apply for this position, please specify that you saw it on AKATECH.tech

JOB DESCRIPTION

The Swiss Nanoscience Institute (SNI) at the University of Basel invites highly motivated scientists to apply for the SNI PhD program in Nanoscience.

We are looking for a PhD student for a joint research activity between the Quantum Technologies Group at the Paul Scherrer Institut (<https://www.psi.ch/en/lmn/bosonicquantum-error-correction-with-superconducting-circuits>) and the Quantum Theory Group at the University of Basel (<https://quantumtheory-bruder.physik.unibas.ch/en/>). The student will become a member of the Swiss Nanoscience Institute (SNI) PhD school.

We will develop new ways to store and manipulate quantum information in nonlinear superconducting oscillators. A key element of our work will be to make use of the many energy levels present in these oscillators to encode qubits that are intrinsically protected against errors. Part of our work will be to devise and implement new nanofabrication processes for superconducting circuits compatible with bosonic quantum error correction. Our goal is to explore both the promise of this approach for quantum computation and simulation, as well as its fundamental aspects in the context of out-of-equilibrium physics.

We are looking for a motivated student with experience or interest in circuit QED, nanofabrication, and nonlinear quantum optics. Over the course of the project she / he will acquire a wide range of experimental skills including:

- Cryogenics and operation of dilution refrigerators
- Microwave circuit design
- Nanofabrication and characterization (lithography, growth and deposition, SEM, AFM, etc.)
- Experimental control and data analysis software
- Quantum measurement and control techniques

In addition, the student will participate in the theoretical developments associated with the project.

Candidates are required to have a MS degree in physics / electronics / mechanics or similar, with a solid background in quantum mechanics, as well as good English language skills. Prior experience in any of the techniques mentioned above is considered a plus. We seek a scientifically ambitious individual who enjoys working in an interdisciplinary and collaborative environment on a highly

competitive subject.

- Excellent scientific and social environment
- Very competitive employment conditions
- Membership in a very supportive and recognized community

The successful candidate will join an attractive interdisciplinary program together with the ~ 30 currently supported scientists. The SNI covers a wide variety of topics, including cutting edge quantum physics and chemistry, material science, nanotechnology, biochemistry, cell biology, or medical research.

Application / Contact

More information and the online application platform can be found at www.phd.nanoscience.ch. For questions please contact the head of the SNI PhD program, Dr. Andreas Baumgartner (andreas.baumgartner@unibas.ch), or directly the respective project leaders.

JOB DETAILS

Title PhD position in bosonic quantum error correction with superconducting circuits (P2101)

Employer University of Basel

Job location Petersplatz 1, CH-4003 Basel

Job types PhD

Fields Quantum Physics, Mechanics, Electronics

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